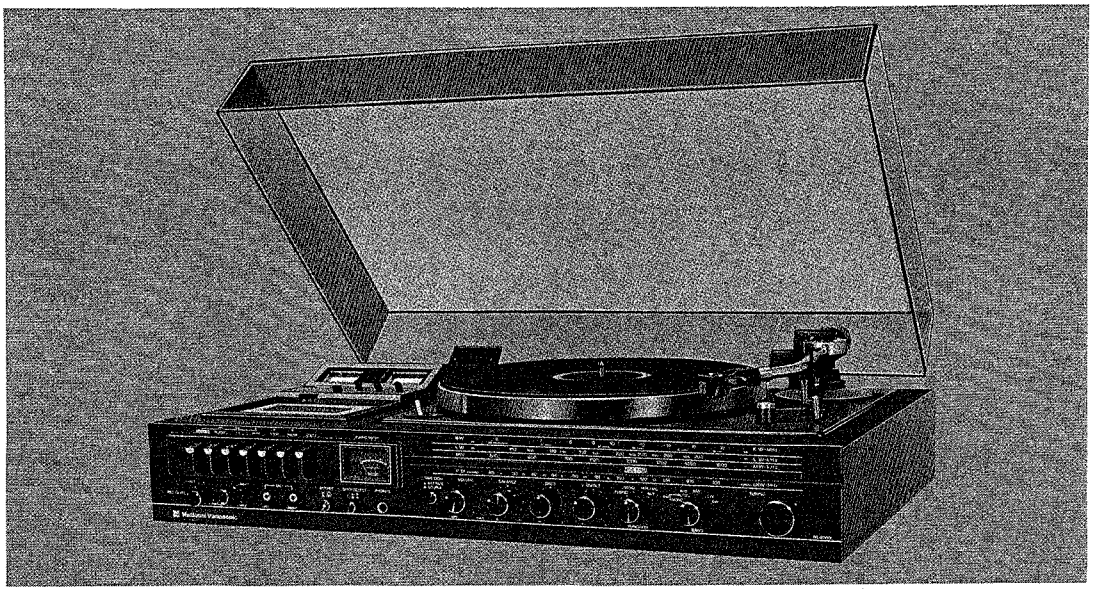
Operating Instructions

Compact Stereo

SG-2080L



National Panasonic

Before operating this set, please read these instructions completely.

Dear Music Lover

Your new National Panasonic Compact Stereo Phonograph with built-in Radio and Cassette Tape Recorder was manufactured and assembled under exacting quality control standards. The incorporation of the latest advances in design and the use of the most modern components ensure outstanding performance with superb sensitivity and tone quality.
Just a few minutes of your time spent reading carefully through this instruction book will assure optimum performance that will bring you continued enjoyment for many years.

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Lieber Musikfreund

Ihr neuer kompakter National Panasonic Stereo-Plattenspieler mit eingebautem Radio und Tonbandgerät wurde unter striktesten Qualitätskontrollen hergestellt und montiert. Berücksichtigung der neuesten Konstruktionsvorteile und Verwendung der modensten Komponenten garantieren hervorragende Leistung mit aussergewöhnlicher Empfindlichkeit und hoher Tonqualität. Es braucht nur einige Minuten, um diese Bedienungsanleitung sorgfältig durchzulesen; garantiert Ihnen aber optimale Leistung und bringt Ihnen jahrelanges Musikvergnügen.

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Ami Mélomane

Votre nouvel électrophone stéréo compact National Panasonic avec magnétophone à cassette et radio incorporés a été soumis tout au long de sa fabrication et de son montage aux contrôles de qualité les plus sévères.
L'adoption des perfectionnements techniques les plus récents au stade de l'étude et des composants les plus modernes assurent des performances remarquables, une sensibilité et une qualité tonale superbes. Les quelques minutes que vous passerez à lire attentivement la présente notice vous permettront d'obtenir de votre chaîne un fonctionnement optimal, source d'une satisfaction constante pendant de nombreuses années.

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Geachte Muziekminnaar

Un nieuwe compacte National Panasonic Stereo Platenspeler met ingebouwde radio en bandrecorder werd vervaardigd en gemonteerd onder voortdurend en streng testen van de kwaliteit. Gebruik van de laatste vindingen en van de allermodernste onderdelen garandert een uitstekende geluidsweergave en een superieure gevoeligheid en klankrijkdom.
Het kost niet meer dan een paar minuten om deze gebruiksaanwijzing door te lezen, maar deze leert u een optimaal gebruik van uw installatie te maken, waardoor u van jaren luistergenot verzekerd kunt zijn.

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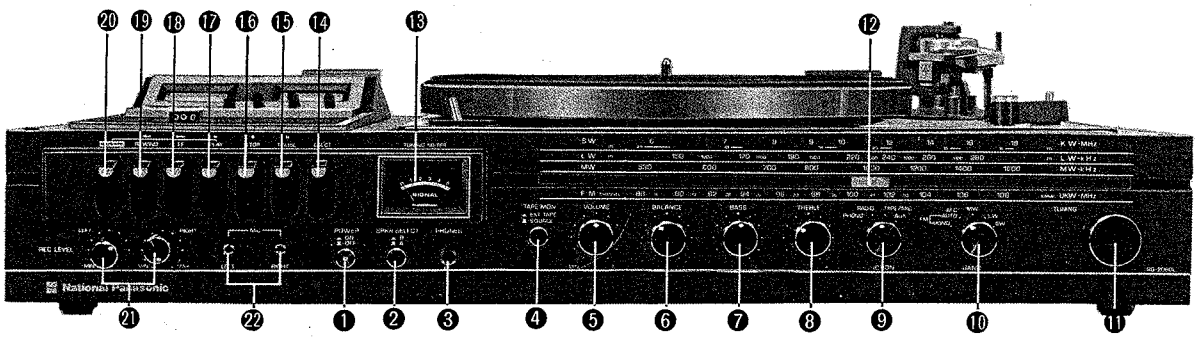


Abb. 1
Fig. 1

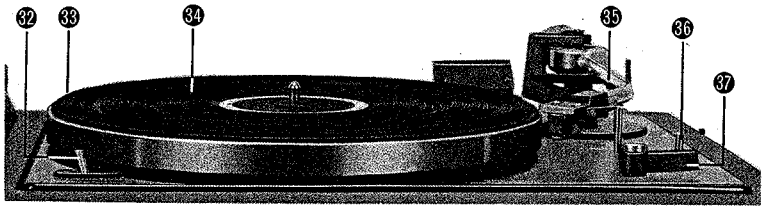


Abb. 2
Fig. 2

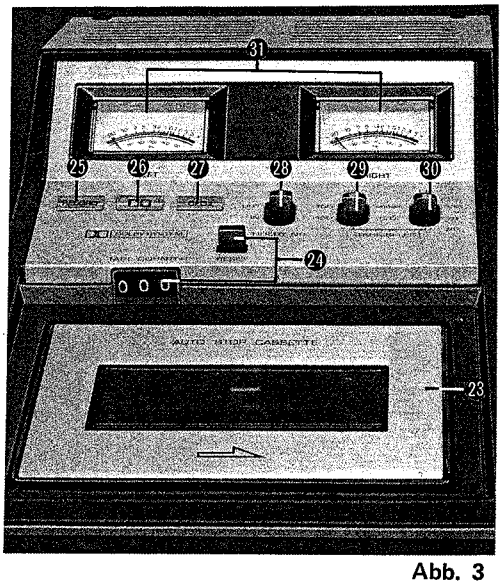
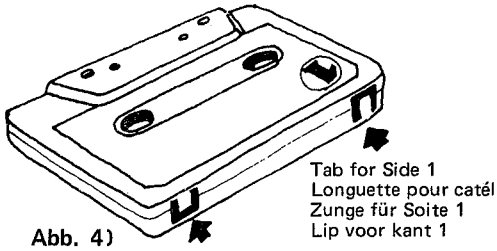


Abb. 3
Fig. 3

Die empfohlene Impedanz der lautsprecher beträgt 4 ~ 16 ohm

N.B.: Nous recommandons des haut-parleurs supplémentaires ayant une impédance de 4 à 16 ohms.

Note: We recommend additional speaker having 4 ~ 16 Ω impedance.



Tab for Side 1
Longuette pour catél
Zunge für Soite 1
Lip voor kant 1

Abb. 4)
Fig. 4)

Tab for Side 2
Longuette pour caté 2
Zunge für Seite 2
Lip voor kant 2

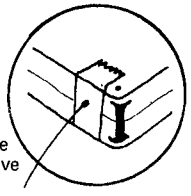


Abb. 5
Fig. 5

Adhesive tape
Bande adhesive
Klebeband
Plakband

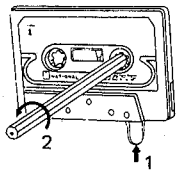
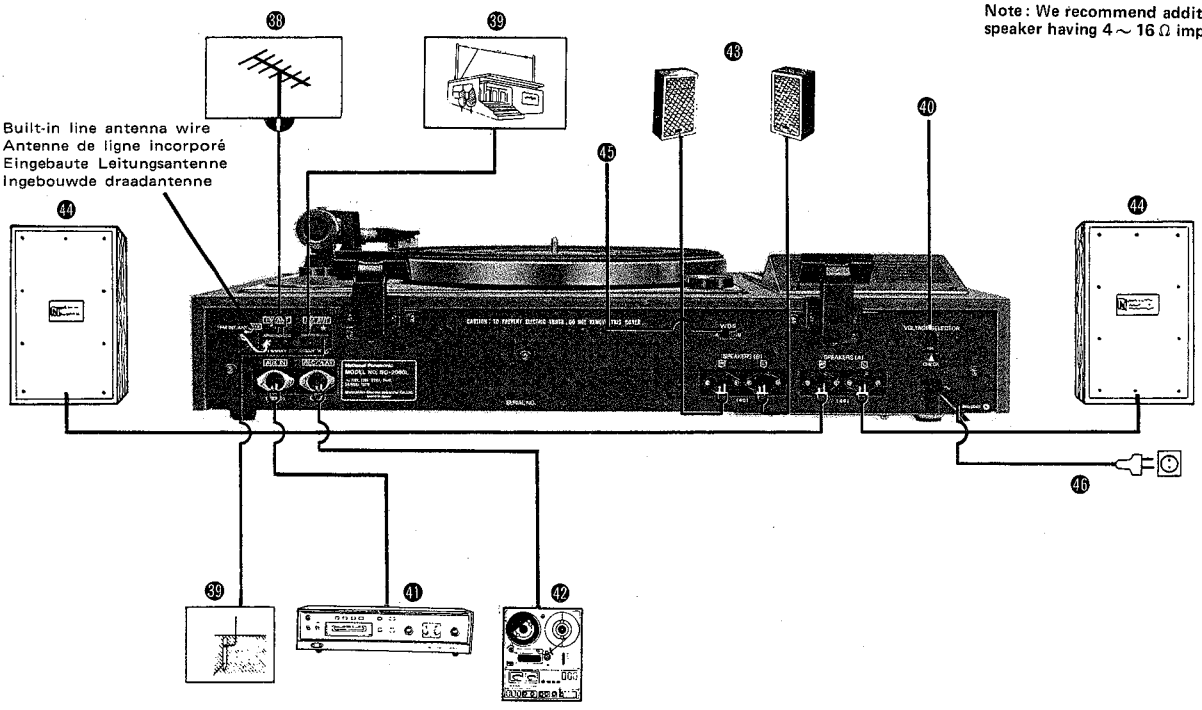


Abb. 6
Fig. 6



Built-in line antenna wire
Antenne de ligne incorporé
Eingebaute Leitungsantenne
Ingebouwde draadantenne

Abb. 7
Fig. 7

Safety Tips

Electrical energy can perform many useful functions. This unit has been engineered and manufactured to assure your personal safety. But **improper use can result in potential electrical shock or fire hazards.** In order not to defeat the safeguards incorporated in this unit, please read and strictly observe the following precautionary measures.

1 This unit is provided with ventilation openings in the cabinet to allow heat generated during operation to be released. Never block the ventilation grille and never place the set near or over radiator or heat register.

2 Overloaded AC outlets and extension cords are dangerous, and so are frayed power cords and broken plugs. Call your service technician for replacement.

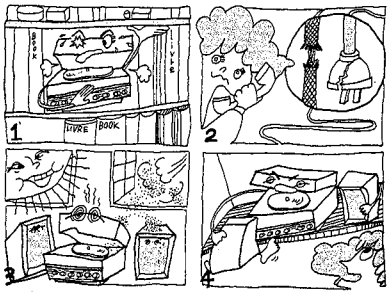
3 This unit should not be directly exposed to sunlight, and should be kept free from dust, moisture and vibration.

4 To avoid personal injury, do not place the unit on a sloping shelf unless properly secured.

5 Turn off the unit before cleaning the cabinet. Use a slightly damp (not wet) cloth. Never use solvents such as alcohol, benzine, or thinner as they may mar the finish of the cabinet.

6 For added protection of the unit during a lightning storm or when the set is to be left unattended for an extended period of time, unplug it from the wall outlet. This will prevent possible shock and fire hazard due to the lightning storms or power line surges.

7 Never expose the set to rain or water. Never operate the unit if liquid has been spilled into it. If the unit becomes damp or wet, pull the plug and have it inspected by a service technician before further use. Rain or excessive moisture – even as a result of extended exposure on a back porch – as well as spilled liquid inside can cause electrical shorts which can result in fire or shock hazards.
We urge you to immediately consult your nearest National Panasonic servicenter for instructions concerning repairs or technical information.



Vorsichtsmassnahmen

Dieses Gerät wurde mit besonderem Augenmerk auf Ihre persönliche Sicherheit konstruiert und hergestellt. **Falsche Verwendung kann jedoch zu Feuergefahr und elektrischen Schlägen führen.** Um alle in dieses Gerät eingebauten Sicherheitsvorrichtungen in tadellosem Zustand zu erhalten, lesen und beachten Sie bitte die folgenden Vorsichtsmassnahmen.

1 Das Gehäuse dieses Gerätes ist mit Belüftungsschlitzen versehen, die für die Abfuhr der erzeugten Wärme sorgen. Diese Schlitze dürfen daher niemals zugedeckt werden; Aufstellungsorte in der Nähe von Wärmequellen und Heizkörpern sind zu vermeiden.

2 Übermässige Belastung des Netzkabels und der Verlängerungskabel sowie beschädigte Kabel und Stecker sind potentielle Gefahrenquellen. Wenden Sie sich bitte sofort an Ihren Service-Mechaniker, damit dieser schadhafte Teile erneuern kann.

3 Dieses Gerät sollte niemals direkter Sonnenbestrahlung ausgesetzt werden; Staub, Feuchtigkeit und Vibrationen sind zu vermeiden.

4 Um Verletzungen zu vermeiden, das Gerät nicht auf schrägen Flächen abstellen.

5 Vor dem Reinigen des Gehäuses ist der Netzschalter auszuschalten. Einen angefeuchteten Lappen (nicht nass) verwenden; niemals jedoch Lösungsmittel (wie Alkohol, Benzin oder Farbenverdünner) benutzen, da dadurch die Gehäuse-Oberfläche beschädigt werden könnte.

6 Wird das Gerät längere Zeit nicht verwendet oder falls es die Wetterbedingungen erforderlich machen (Gewitter), das Netzkabel von der Wandsteckdose abziehen. Dadurch werden Feuergefahr und elektrische Schläge vermieden.

7 Dieses Gerät vor Regen bzw. Eindringen von Wasser schützen. Falls aus Unachtsamkeit Flüssigkeiten verschüttet werden und in das Innere dieser Musikanlage gelangen, sofort das Netzkabel von der Wandsteckdose abziehen, um Feuer und elektrische Schläge zu vermeiden; dies gilt auch für längere Lagerung in feuchten Abstellräumen. In einem solchen Fall sofort das Gerät durch einen qualifizierten Service-Techniker prüfen lassen.
Wir ersuchen Sie dringendst, sich sofort an Ihren nächsten National Panasonic Service-Vertreter zu wenden, falls Reparaturen erforderlich sind oder andere Fragen auftauchen sollten.

Conseils de sécurité

L'énergie électrique permet d'obtenir de nombreuses fonctions utiles. Cet appareil a été conçu et fabriqué pour assurer la sécurité de l'usager. **Mais un emploi incorrect peut entraîner une électrocution ou des risques d'incendie.** Afin de ne pas entraver les mesures de sécurité prévues dans cet appareil, il convient de lire et d'observer rigoureusement les instructions de prévoyance suivantes.

1 Cet appareil comporte des ouvertures de ventilation dans le coffret pour permettre à la chaleur produite pendant le fonctionnement de se dégager. Ne jamais obturer la grille de ventilation et ne jamais placer l'appareil près ou au-dessus d'un radiateur ou d'un réchaud.

2 Prises de sortie Cour. Alt. et cordons rallonges surchargés peuvent être dangereux, de même pour les cordons d'alimentation dénudés et les prises cassées. Il convient de faire appel à un réparateur qualifié pour le remplacement des pièces défectueuses.

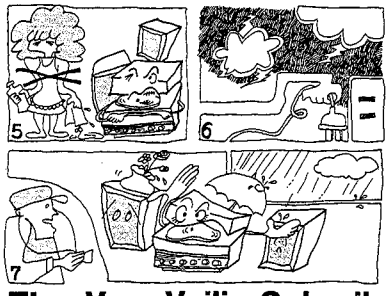
3 Cet appareil ne doit pas être exposé directement au soleil, et doit être exempt de poussière, d'humidité et de vibrations.

4 Pour éviter les accidents corporels, ne pas placer l'appareil sur une étagère inclinée à moins qu'il ne soit parfaitement fixé.

5 Arrêter l'appareil avant de nettoyer le coffret. Utiliser un chiffon légèrement humide (pas mouillé). Ne jamais employer de dissolvants tels que l'alcool, la benzine, ou diluant car cela pourrait abîmer la finition du coffret.

6 Pour des protections supplémentaires de l'appareil durant l'orage ou si l'appareil est laissé sans surveillance pendant une période prolongée, débrancher sa fiche de la prise murale. Cela évitera les risques d'électrocution et d'incendie par suite des orages ou des surtensions en ligne.

7 Ne jamais exposer l'appareil à la pluie ou aux projections d'eau. Ne jamais faire fonctionner l'appareil si du liquide a été renversé dessus. S'il se trouve mouillé ou humide, le débrancher de la prise et le faire vérifier par un technicien qualifié avant de l'utiliser. La pluie ou une humidité excessive- même en cas d'exposition prolongée à l'extérieur- ainsi que du liquide renversé jusqu'à l'intérieur de l'appareil peuvent causer des courts circuits électriques qui résulteraient par des risques d'électrocution et d'incendie.
Il importe donc de s'adresser alors à un service de vente National Panasonic le plus proche concernant les renseignements techniques et réparations éventuelles.



Tips Voor Veilig Gebruik

Electriciteit heeft vele nuttige toepassingen. Deze installatie is geconstrueerd met het oog op een veilig gebruik. Onjuist gebruik kan electrische schokken of brand tot gevolg hebben. Laat de ingebouwde beveiligingen intact en neem de volgende veiligheidsvoorschriften in acht.

1. In de kast van deze installatie bevinden zich ventilatie-openingen, waardoor tijdens gebruik geproduceerde hitte kan ontsnappen. Blokkeer nooit de ventilatie en zet de installatie nooit vlak naast of op een radiator.

2. Overbelaste stopcontacten en verlengsnoeren zijn gevaarlijk, evenals gerafelde snoeren en gebroken stekkers. Vervang deze.

3. Zet de installatie niet rechtstreeks in de zon en op een plaats vrij van vochtigheid, stof en trillingen.

4. Zet, om ongelukken te voorkomen, de installatie niet op een schuin aflopende plank tenzij stevig bevestigd.

5. Zet de installatie af vóór u de kast schoonmaakt. Gebruik een enigszins vochtige (niet natte) doek. Gebruik geen schoonmaakmiddelen zoals alkohol, benzine of terpentijn, daar deze het vernis van de kast kunnen aantasten.

6. Trek de stekker uit het stopcontact tijdens onweer of als de installatie voor langere tijd niet gebruikt gaat worden.

7. Gebruik de installatie nooit, als er vloeistof in is gekomen of als deze vochtig of nat is. Trek de stekker uit het stopcontact en laat de installatie nakijken voor u hem weer gebruikt. Raadpleeg de dichtstbijzijnde National Panasonic dealer voor technische informatie of adviezen omtrent reparaties.

Special Features

RADIO (FM/FM AUTO/MW/LW/SW-4 Band Radio)

- Smartly designed Tuning Dial and "Easy-to-Spot" illuminated Dial Pointer
- Equipped with Tuning Meter
- FM AUTO position automatically switches the radio to "stereo" when the program is broadcasted in FM STEREO
- The built-in "Automatic Frequency Control" (AFC) on FM AUTO gives you drift-free FM reception

PHONO

- Full-size 30cm (12") Belt-drive Record Player with Frequency Generated Servo DC Motor
- Convenient "viscous-damped" Cueing Control
- Equipped with Stylus Pressure Adjustment

CASSETTE TAPE RECORDER

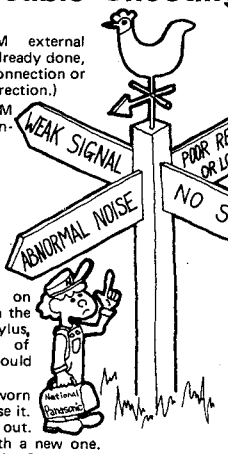
- Auto-Stop Cassette System that operates at the end of the tape
- Convenient "Pause" control for short intermission during play and recording mode
- The "Recording Level Controls" for each channel give you finest recording and saves you from keeping on adjusting knobs
- Dolby★ noise-reduction system for high-fidelity recording and playback in cassette
- Convenient Separate Bias and Equalization Selectors (Tape Select) enable you to change the frequency characteristics for either "NORMAL" or "CrO_2" cassette tapes
- Convenient VU meters for recording and playback

OTHERS

- Equipped with Speaker selector switch for you to choose between two pairs of speaker systems
- Free-Stop (inclining) Dust Cover

★ Dolby and "Double D (DD) Symbol" are the Trademarks of the Dobly Laboratories, Inc.
Noise reduction circuit made under license from Dolby Laboratories, Inc.

Some Trouble Shooting Hints



Radio
FM; Connect FM external antenna. (If already done, recheck its connection or change its direction.)
AM; Connect AM external antenna.

Cassette Tape Recorder
- The Record/Play and Erase heads are dirty. (Refer to "Head Cleaning.")
- The cassette tape is worn out. Do not use it.
- Inappropriate tape being used.
- Dolby NR on a non-encoded recording

Phono
- Remove dust on the disk or on the tip of the stylus.
- Stylus is out of position. It should be corrected.
- The disk is worn out. Do not use it.
- Stylus is worn out. Replace it with a new one. (Refer to "Stylus Replacement.")

Common (Radio, Phono and Cassette Tape Recorder)
- AC cord loose or disconnected. Recheck it.
- Speaker cords are disconnected. Recheck them.
- Adjust volume control.
- Function selector should be in correct position.
- Tape Monitor must be in "SOURCE" (■).
- Headphones should be disconnected.
- Cassette tape is caught on the head or capstan. Remove and reinsert it into the cassette holder.

Front Panel Controls

❶ **Power push-button**
❷ **Speaker selector switch** (See "Some Helpful Hints" on Page 5)
❸ **Headphones** (See "Headphones Listening" on Page 5)
❹ **Tape monitor switch** (See "Some Helpful Hints" on Page 5)
❺ **Volume control**
❻ **Balance control**
❼ **Bass control**
❽ **Treble control**
❾ **Function selector**
❿ **Band selector**
⓫ **Tuning control**
⓬ **Dial pointer**
⓭ **Tuning meter**
⓮ **Eject button**
⓯ **Pause button**
⓰ **Stop button**
⓱ **Play button**
⓲ **Fast forward button**
⓳ **Rewind button**
⓴ **Record button**
㉑ **Recording volume controls**
㉒ **Microphone jacks**
㉓ **Cassette holder**
㉔ **Tape counter with Reset button**
㉕ **"RECORD" indicator lamp**
㉖ **"Dolby NR" indicator lamp (DD)**
㉗ **"CrO_2" indicator lamp**
㉘ **Dolby noise reduction switch**
㉙ **Bias selector switch**
㉚ **Equalization selector switch**
㉛ **VU meters** (Recording and Playback)

PHONO CONTROLS

㉜ **Speed select lever**
㉝ **45 rpm adaptor**
㉞ **Turntable**
㉟ **Pickup arm**
㊱ **Cueing lever**
㊲ **Stop lever**

REAR PANEL TERMINALS

㊳ **External FM aerial terminals**
(See "Aerial and Earth" on Page 5)
㊴ **Terminals for external AM aerial and earth**
(See "Aerials and Earth" on Page 5)
㊵ **AC power line voltage selector** (See "Power Supply" on this page)
㊶ **Auxiliary input jack (AUX IN)**
(See "Additional Components" on Page 8)
㊷ **Record/Play jack (REC/PLAY)**
(See "Additional Components" on Page 8)
㊸ **Speaker B jacks** (See "Some Helpful Hints" on Page 5)
㊹ **Speaker A jacks** (See "Some Helpful Hints" on Page 5)
㊺ **Whistle Defeat Switch (WDS) for AM recording**
(See "Some Helpful Hints" on Page 5)
㊻ **AC power cord**

Power Supply

Before playing your unit; ascertain the AC line voltage selector. Make sure that it is adjusted for the voltage in your area.
The voltage to which it has been set at factory can be seen on the rear of this unit. (Fig. 7)
CAUTION: Before adjusting the voltage selector ㊵, disconnect the AC power cord ㊻ from an AC outlet.
If necessary, reset the AC line voltage selector with a screwdriver.

E
1
2

Aerials and Earth

FM AERIAL (FM ANT)

Built-in line aerial: This unit has been connected to the built-in FM line aerial at the factory. Stretch out the power cord completely and change the direction of the power cord until optimum FM or FM Stereo reception is obtained.

External FM aerial: For FM Stereo (FM AUTO) reception in fringe areas, or where the built-in line cord aerial does not provide satisfactory reception, connect an FM dipole aerial to the FM aerial terminals ㊳.

Always disconnect the built-in line aerial wire from the FM aerial terminal before connecting an external FM aerial. (Fig. 7)

Your National Panasonic dealer is most familiar with the type of reception in your particular area and, if necessary, should be consulted for further information.

AM AERIAL (AM ANT) and EARTH (GND)

The built-in extra-sensitive ferrite core aerial assures excellent MW and LW reception in most areas. However, should you wish to receive a very distant broadcast, (such as in SW band) connect an external AM aerial to this unit's AM aerial terminal ㊴

To reduce noise, connect a wire between the earth terminal ㊴ and earth. (See Fig. 7)

LOCATION:

Find a suitable place for this unit away from any source of heat, and one that allows at least 2-3 inches of ventilation space above and behind the chassis. Keep this unit away from some large metallic parts

Some Helpful Hints

■ **Speaker selector switch ❷**

"A" (▮) When you connect the speaker systems to the Speaker jacks "A" ㊹, set this button to this positon.

"B" (▬) When the speaker systems are connected to the Speaker jacks "B" ㊸, set this button to this position.

■ **Tape Monitor switch ❹**

Use this switch only while playing or monitoring external tape deck through this unit. The source should be a tape deck (optional) connected to the "REC/PLAY" of this unit with a "DIN" type connecting cable. This switch shoule be in "EXT TAPE" (▬).

* This switch should always be in "SOURCE" (▮) when operating the built-in radio, phono or cassette tape, otherwise sounds from the speakers cannot be heard.

* Refer to "Additional Components" section.

■ **Whistle Defeat switch for AM recording ㊺**

When recording from MW & LW radio through the built-in cassette tape recorder, some "whistle sound" noise may be heard from the speakers. When this occurs, simply shift this switch either "A" or "B" until the "whistle" sound noise disappear. Then satisfactory AM radio recording will be achieved.

NOTE: However, if the "whistle sound" or "interference" noise comes from other external electrical devices, (i.e. T.V., fluorescent lamps, refrigerators, etc.) this switch will not be effective.

Headphone Listening

For private listening from all program sources, plug a stereo headphones, optional, (8 ohms or more) into the headphone jack ❸ . The speakers will be automatically disconnected.

CAUTION: Be sure to turn down the volume control before connecting the headphones. A high level of audio power can overload and severely damage the headphones, not to mention your eardrums.

Radio Operation

Set the following controls:

1) Function selector ❾ → to "RADIO".
2) Band selector ❿ → to your desired band, FM/FM AUTO/MW/LW/SW.
3) Power push-button ❶ → to "ON" (▬)
4) Tuning control ⓫ → to your desired radio station.
   The Dial pointer ⓬ indicates your station.

N.B.: While tuning your radio staiton watch the needle of the Tuning meter ⓭ that it deflects onto the farthest right (biggest number) to obtain the highest radio tuning frequency.

5) Volume control ❺ → to the desired volume level.
6) Balance control ❻ → so that sound seems to come from the center by adjusting the sound balance from your left and right speaker systems.
7) Bass ❼ and Treble ❽ controls → to obtain the desired tonal quality.

After listening, switch the Power push-button to "OFF" (▮).

FM STEREO RECEPTION

The FM STEREO INDICATOR will automatically light up when the program is being broadcast in FM Stereo. You are listening to FM Stereo only when the FM STEREO INDICATOR is lit and the Band selector ❿ is set to "FM AUTO".

The built-in AFC (Automatic Frequency Control) automatically locks in your signal on "FM AUTO" to give you drift-free reception. It eliminates frequency drift.

Phono Operation

Before using . . . . .

1) Remove the three (3) transit screws and three spacers so that the turntable unit can rotate freely.
2) Place the turntable mat (enclosed with this unit) over the turntable.
3) Rotate the turntable clockwise by hand, five times, to ensure that the mechanism is in neutral position.

Free-Stop Dust Cover

To install the dust cover

Position the dust cover so that its rear end would be inserted first and proportionately toward the two hinges located on the rear portion of the center unit. Insert it carefully but firmly onto the hinges. (Fig. 8)

To remove the dust cover, simply lift it gently from the hinges.

It is advisable to remove the dust cover when it is in "open" position.

CAUTION: **Never apply lubricants on these hinges.**

Installation of Headshell and Balance Weight

Headshell Installation

Install the "bayonet-type" **headshell** (enclosed with this unit) to the Pickup arm ㊱ firmly by turning the **headshell fixing nut** counter-clockwise. Lock it securely (Fig. 9)

Balance Weight Installation

Mount the **balance weight** (also enclosed with this unit) onto the rear end of the Pickup arm. (Fig. 10)

NOTE: Remove the stylus protection cover from the headshell.

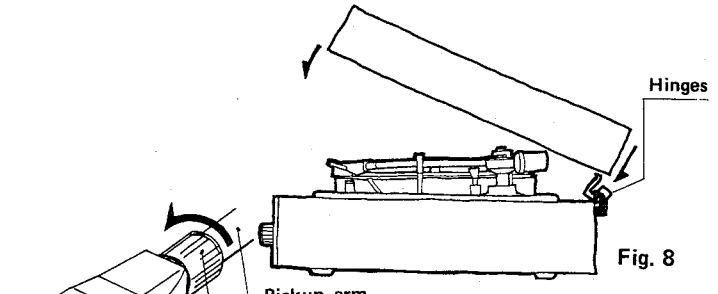


Fig. 8

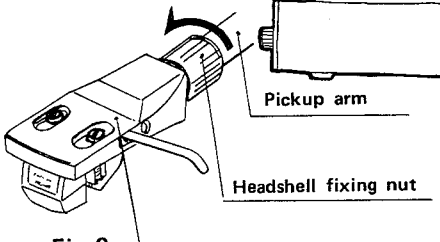


Fig. 9

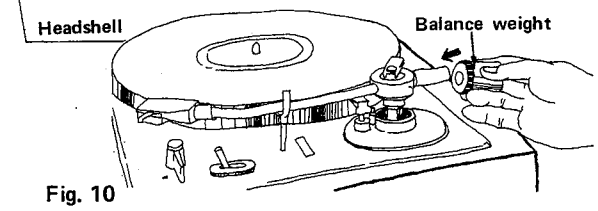


Fig. 10

Stylus Pressure Adjustment

1) To adjust the stylus pressure, release the Pickup arm (with cartridge) from its rest position. Place a record on the turntable. Then balance the pickup arm by turning the **balance weight** until the stylus is leveled to the surface of the record (when looking from the side of the turntable unit).
2) Set the **stylus pressure dial** to "0" position and turn the **balance weight** to "2" since the specified stylus pressure of the cartridge is 2.0 grams. (Fig. 11)

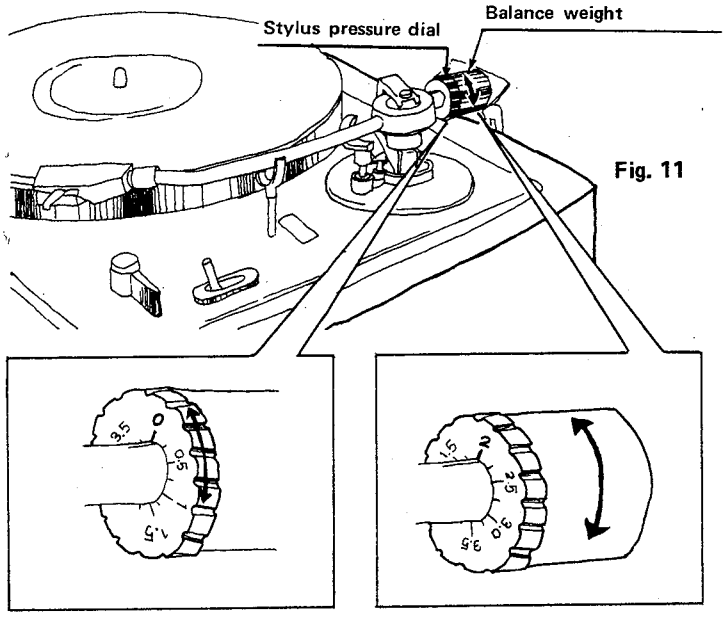


Fig. 11

To Play Record

1) Function selector ⑨ → to "PHONO".
2) Power push-button ❶ → to "ON" (▬).
3) Speed select lever ㉜ → to the type of record to be played, "33" or "45" rpm.
4) Gently place the record on the Turntable ㉞.
5) Move the Cueing lever ㊱ to ▼ position to lift the Pickup arm ㉟ from its rest position.
6) Move the Pickup arm ㉟ above the record on the selected point. At this stage, the Turntable ㉞ starts to rotate.
7) Move the Cueing lever ㊱ to ▼ position to lower the Pickup arm ㉟ onto the record.
8) Adjust the volume, balance, bass and treble controls as you would for radio operation.

* At the finish of the record, the Pickup arm ㉟ will return to the rest position and the turntable will shut off automatically.

NOTE: When playing 45 rpm record with a large center hole, simply place the 45 rpm adaptor ㉝ into the center spindle.

To interrupt . . . . .

To interrupt the playing of record, move the Cueing lever ㊱ to the ▼ position to lift the Pickup arm ㉟.
The Pickup arm ㉟ will descend slowly and resume playing in the same groove when the Cueing lever ㊱ is set to ▼ position.

To stop . . . . .

To stop during play, move the Stop lever ㊲ to "STOP" position. The Pickup arm ㉟ will return to the rest position and the turntable will shut off automatically.

After using . . . . .

Depress the Power push-button ❶ to "OFF" (▮).

STYLUS REPLACEMENT

Replace the stylus at the first sign of wear to assure pleasant sound at all times and to prevent damage to records. This is easily done by following these instructions.

1) Lift Pickup arm ㉟ to a position that will make the stylus accessible. (You may remove the **headshell** from the Pickup arm by turning the **headshell fixing nut** clockwise.)
2) Gently remove worn stylus and replace new stylus into correct position. (Fig. 12)

RECOMMENDED STYLUS: EPS-35STSD (Diamond type)

CAUTION: **Be sure to switch off the power to the unit when replacing the stylus. And remember to use the correct stylus to prevent damage to your records. Also be careful not to distort the stylus pressure dial setting when removing or replacing the headshell to the Pickup arm.**

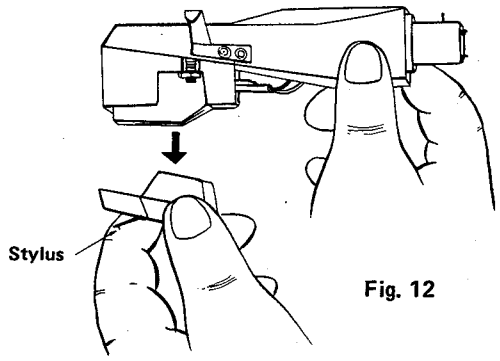


Fig. 12

CARTRIDGE REPLACEMENT

Please follow these instructions when replacing the cartridge and/or the headshell.

1) Remove the **headshell** from the Pickup arm by turning the **headshell fixing nut** clockwise.
2) Remove the **cartridge** from the **headshell** by removing the two (2) **screws** with screwdriver and disconnect the **lead wires** from the cartridge. (Fig. 13)
3) Mount a new cartridge onto the headshell so that it is perpendicular to the disc surface (when looking from the front), using the nuts attached. (The stylus setting position should be in correct position. Please refer to "Stylus Setting Position" on this page.)
4) Connect the lead wires to the cartridge. **Observe correct color indications when connecting the lead wires.** (Fig. 14)
5) Install the headshell to the Pickup arm.

STYLUS SETTING POSITION

The cartridge can be moved to and fro the headshell until correct stylus setting position is obtained. Refer to **Fig. 15**

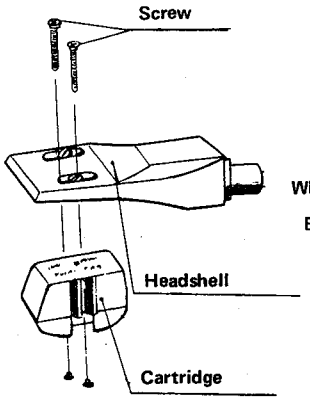


Fig. 13

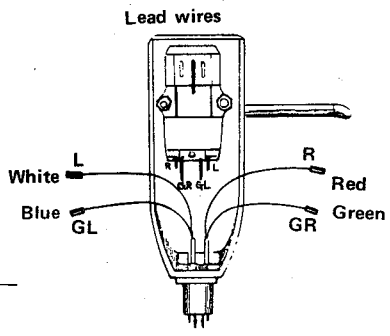


Fig. 14

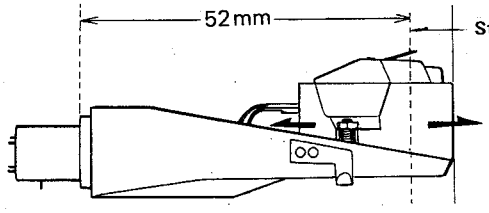


Fig. 15

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Tape Operation

Selection of Cassette Tapes

A wide selection of cassette tapes is available today. To make tapes longer than 60 minutes, it is necessary to use thinner tape, which is fragile and must be handled with extreme care. Because the likelihood of a cassette failure increases greatly as the playing time is increased, we recommend not using tapes longer than necessary.
Sixty-minute tapes will provide optimum performance with this unit.

NOTE:
Should the tape develop a slack (Fig. 6, arrow 1), tighten the tape tension by lightly turning the hub of the cassette (Fig. 6. arrow 2) with an ordinary pencil before inserting the cassette into the cassette holder.

SOME IMPORTANT HINTS FOR PROPER OPERATION OF THE TAPE RECORDER BUTTONS

Always depress the **STOP** button before changing the mode of operation. (For example: Play → **Stop** → FF → **Stop** → Rewind → **Stop** → Record → **Stop** → etc.)
By depressing the **STOP** button, the previously depressed operating button will return to its original position.
Do not depress buttons or lift them up by force.
If the **RECORD** button cannot be depressed easily, do **NOT FORCE** it, but check the erase protection device on your **TAPE**.
(See the **ERASE AND ERASE PROTECTION SECTION** for details on Page 8.)

Inserting the Cassette

1) Depress the cassette Eject button ⑭ to open the Cassette holder ㉓.
2) Insert the cassette firmly with the openings (tape exposed side) facing you.
   Be careful not to touch the exposed tape.
3) Close the cassette holder manually.

Removing the Cassette

1) Depress the Stop button ⑯.
2) Depress the cassette Eject button ⑭ to open the cassette holder and remove the cassette.

AUTO STOP CASSETTE SYSTEM

When the tape reaches its end, during playback or recording, it automatically stops and the record button and play button return to their original positions. Note, however, that this feature does not function during rewind or fast forward and that the stop button must be pushed.

- When the tape comes to an end, it automatically stops.
  At this time, because the mechanical stop device operates, the play button will not lock (stay depressed) when pushed.
- To continue operation (recording or playback), you must rewind the tape or press the eject button and turn the cassette over.

Rewind and Fast Forward

To rewind the tape to the left reel, push the Rewind button ⑲. To advance the tape rapidly to the right, push the Fast Forward button ⑱.
CAUTION: **Always be sure to depress the STOP button after every operation of the REWIND or FAST FORWARD button. When the REWIND or FAST FORWARD button is left depressed accidentally, it may cause problems with the proper operation of your unit.**

Tape Counter and Reset Button

The Tape Counter ㉔ will automatically start to count when playing back or when recording. This counter will help you determine approximately where to re-play or re-record. Therefore, it will be convenient for you to set the tape counter to "000" by pushing the Reset button ㉔ before the start of any playback or recording.

Pause Button

To interrupt the tape movement temporarily during playback or recording, depress the Pause button ⑮. To resume playing, simply release this button by pushing it once again.

The Dolby noise-reduction system

Annoying tape hiss has, until recently, been an unavoidable disturbance to the critical music listener. This noise is, unfortunately, especially noticeable in high-quality cassette decks and recorders, because the tape speed is slow. However, when recording and playback are both made by the Dolby noise-reduction system, tape "hiss" can be remarkably reduced.

What is "Dolby noise-reduction system"?

When we hear high and low level sounds at the same time, the low level sounds may be "masked". The stronger sound seems to block out the weaker sound. Noise is therefore only usually noticable in the quieter parts of the music.

During recording the Dolby system boosts the level of the low level, high frequency sounds but not the tape noise. The lower the level of the sounds to be recorded, the greater the high frequency boost. During playback the reverse takes place. The high frequency sounds are attenuated by an amount that is equal to the boost, given in record, which therefore restores them to their original level.
The high frequency tape noise is also attenuated by the Dolby circuit during playback. Because the noise was not boosted during recording, the noise during playback is as much as 10 dB less than if would have been without the Dolby system.

Bias selector and Equalization selector

In addition to conventional "Normal" tape, chromium dioxide tape is now available for this model.
Separate Bias and Equalization selectors enable you to change the frequency characteristics for either standard "Normal" or the Chromium Dioxide "CrO_2" cassette tapes. Set these selectors to the desired position when recording or playing back depending on your "Cassette tape". Please refer to the following table.

Mode	Tape	EQ Selector	Bias Selector	"CrO_2" lamp
RECORD	CrO_2	CrO_2 (70μS)	CrO_2 (150%)	ON
	Normal	Normal (120μS)	Normal (100%)	OFF
	Fe-Cr	CrO_2 (70μS)	Normal (100%)	OFF
PLAY	CrO_2	CrO_2 (70μS)		ON
	Normal	Normal (120μS)		OFF
	Fe-Cr	CrO_2 (70μS)		ON

NOTE: Please note that as for "Ferri-Chrome" type tape, the needle movement of VU meter during playback becomes larger than the movement during recording.

PLAYBACK

1) Function selector ⑨ → to "TAPE/MIC".
2) Power push-button ❶ → "ON" (▬).
3) Insert the pre-recorded cassette tape firmly.
4) Set the Dolby noise reduction switch in the "OUT" position for playback of tape recorded in the usual (non-Dolbized) way, or to the "IN" position for tape recorded by the Dolby noise reduction system.
5) Set the Equalization selector to the position corresponding to the type of tape to be played back, "Normal" or "CrO_2".
6) Play button ⑰ → depress.
7) Adjust the volume, balance, bass and treble controls as you would for radio operation.
8) Stop button ⑯ → push in order to stop playback.

RECORDING

This unit has provisions for monitoring through its speakers, which is particularly useful when making recordings.
When recording, volume, balance, bass and treble control settings do not affect recording level and tonal quality.

Recording indicator lamp

This will illuminate when you are recording through the built-in cassette tape recorder.

CrO_2 indicator lamp

This will illuminate when the Tape Select switches ㉙ ㉚ are set to "CrO_2" position.
NOTE: However please note that this lamp would not light up when only Bias selector switch is set to "CrO_2" position.

Dolby NR indicator lamp (DD)

This will illuminate when the "Dolby NR" switch is set to "IN" position.

Recording from Radio or Phono

1) Insert the cassette to be recorded into the Cassette holder ㉓.
2) Operate as for radio or phono operation and choose the radio program or phono record you wish to record.
3) Set the Dolby noise-reduction switch ㉘ to the "IN" position unless you want to make a recording without the Dolby system.
4) Set the Equalization selector switch ㉚ and the Bias selector switch ㉙ to the position corresponding to the type of tape to be recorded, "Normal" or "CrO_2" positions.

5) Push the Record button ⑳ and set the correct recording level by adjusting the Recording volume controls ㉑ until the maximum deflection of the needles of the VU meters ㉛ is about 0dB during the loudest portions of the program.
   NOTE: If the needle deflects into the far right area (within 0 and +5dB), the recording level is set too high and the recorded sound may be distorted. In this case, re-adjust the Recording volume controls ㉑ to decrease the recording volume level for each channel.
6) After setting the correct recording level, press the Pause button ⑮.
7) While pressing Record button ⑳, push the Play button ⑰.
8) To start recording, release the Pause button ⑮.
9) To stop recording, simply push the Stop button ⑯.

CAUTION: For maximum recording fidelity it is advisable not alter the Recording level control after the start of a recording unless the meters obviously read too high or too low.

Recording from the Microphone(s)

1) Connect the microphone to either "LEFT" or "RIGHT" microphone jack ㉒. For Stereo recording, connect the microphones to the "LEFT" and "RIGHT" jacks ㉒.
2) Function selector ⑨ → "TAPE/MIC".
3) Follow items 3 to 9 of the "Recording from Radio or Phono" section.
   NOTE: You may use the headphones when monitoring the sound(s) being recorded from the microphone(s), to prevent howling (freedback).

ERASE AND ERASE-PROTECTION

Erasing

Any recorded material on a tape is automatically erased when the tape is again recorded upon and only the new sound remains. To erase the tape without adding a new recording, proceed as follows.
1) Disconnect the microphones.
2) Function Selector ⑨→ to "TAPE/MIC".
3) Recording volume control ㉑ → to "MIN" position
4) Let the tape run as if recording. All previous recordings will be erased.

Erase-Protection

Cassette incorporate a convenient erase-protection device to prevent accidental erasure. When the small "tabs" at the rear of a cassette are broken out, the erase-protection device will be activated, preventing accidental erasure of pre-recorded tapes.
To protect side 1 recording, break out the tab for side 1. For protection of side 2, break out the tab for side 2. (Fig. 4)
NOTE: If, for some reason, you want to record on a track for which the "tab" has already been removed, simply cover the slot with a small piece of cellophane or vinyl tape. (Fig. 5)

HEAD CLEANING (Fig. 16)

The REC/PLAY and ERASE heads in the cassette deck may accumulate dust and tape residue, causing poor and wavering sound. This residue should be cleaned periodically (about every 100 hours of playing and recording time). Clean the surface of the heads gently with a cotton swab moistened with alcohol or by using the demonstration tape supplied with this unit.
CAUTION: **Do not use any solution other than alcohol for head cleaning. Never touch the REC/PLAY and ERASE heads with metal objects such as screwdrivers and never bring a magnet close to the tape mechanism.** To obtain optimum performance from your cassette deck, these instructions should be remembered:

* Using cotton swab

1) Depress the eject button ⑭. Remove the cassette from the cassette holder ㉓. Clean the rubber pressure roller and the capstan shaft with a soft, lint-free cloth slightly moistened with alcohol.
   CAUTION: **Never apply solutions other than alcohol or commercial tape head cleaner.**
2) Push the play button ⑰. The record/playback and erase heads will then be accessible. Clean these heads with a soft, lint-free cloth slightly moistened with alcohol.

* Using the demonstration tape supplied with this unit

(A strip of head cleaning tape of about seven seconds duration is attached to both ends of side 1 and side 2 of the demonstration tape).
1) Insert the cassette, using either side 1 or side 2.
2) Push the play button ⑰.
3) Let the tape run for several seconds, then push the stop button ⑯.
4) Remove the cassette by pushing the eject button ⑭. The heads are now clean.

PRECAUTION:
* When listening to the demonstration tape, stop the tape before it reaches the head cleaning strip.
* Too frequent use of head cleaning section should be avoided.
* Recommended frequency for cleaning the head is once every 100 hours of playing and recording time or once a month.

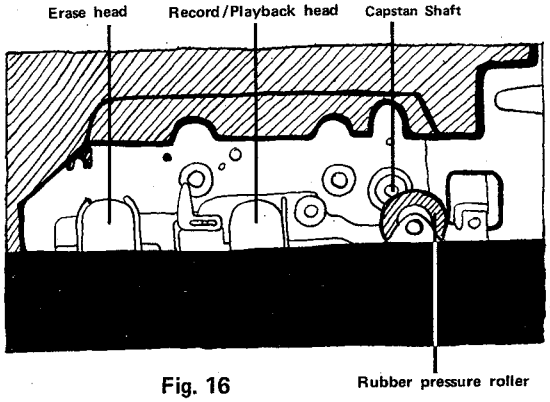

Fig. 16

Additional Components

■ To use as an Audio Amplifier through "AUX IN" terminal

This unit may be used for playing an additional stereo program source through its "AUX IN" jack ㊶. The "auxiliary program source" may be a tuner, open-reel tape deck, cassette tape recorder or other similar devices. See Fig. 7.
1) Connect the "AUX IN" jack ㊶ of this unit to the line output jack of the auxiliary program source, using appropriate "DIN" type connecting cable (optional).
2) Tape Monitor ❹→ to "SOURCE" (▮).
3) Function Selector ⑨ → to "AUX".

■ To use External Tape Deck through "REC/PLAY" terminal

You may record any program source to which you are listening by connecting an external tape deck to this unit's "REC/PLAY" jack ㊷ using appropriate "DIN" type connecting cable (optional). See Fig. 7

RECORDING

Please refer to the "Instruction Manual" of the external tape deck for details.
1) Tape Monitor ❹→to "SOURCE" (▮).
2) Select the program you wish to record by turning the Function selector.

NOTES:
- When recording from radio or phono through an external tape deck and through your built-in tape deck simultaneously, some strange sound (beating) may be heard from the speakers. Such kind of external tape deck as mentioned above is not appropriate for "simultaneous" recording and not to be used with this unit.
- When recording "AM" program from this unit through an external tape deck, some noise may be heard from the speakers. This is because the external tape deck and this unit are placed too close to each other. Please keep the tape deck away from this unit.
- Do not connect this unit to any low level input(s) on the external tape unit such as "MICROPHONE". The recordings will be severely overloaded and distorted.

MONITORING

If your stereo tape unit has true tape-monitor facilities (separate circuits and head for recording and for playback), you may monitor the tape while making the recording. This will allow you to compare its sound quality with that of the original program material. To monitor the tape, alternate the Tape Monitor ❹ between "SOURCE" (▮) (to hear the original program material) and "EXT TAPE" (▬) (to hear the same material a fraction of a second later, as it sounds on tape).

NOTE: **Remember to set the Tape Monitor back to "SOURCE" (▮) when you have finished recording, otherwise a program chosen with the Function selector cannot be heard.**

PLAYBACK

When playing back tapes from your external tape deck, set the Tape Monitor to "EXT TAPE" (▬). The recorded sound will then be heard. Adjust the volume, balance, bass and treble as you would for radio operation.

Specifications

AMPLIFIER SECTION

Power Output:	MPO 2 x 30W (THD 1%, 4 ohms) RMS 2 x 23W (THD 1%, 4 ohms)/One Channel Driven RMS 2 x 18W (THD 1%, 4 ohms)/Both Channel Driven
Frequency Response:	10 Hz~25 kHz, ±1.5dB
Input Sensitivity and Impedance:	
Phono:	2mV 47 k ohms
Mic:	1mV 3 k ohms
Aux:	300mV 100 k ohms
Tape:	300mV 30 k ohms
REC OUT/Impedance:	30mV 82 k ohms (DIN)
Tone Control:	
Bass:	+15dB~−15dB at 50 Hz
Treble:	+15dB~−15dB at 10 kHz

FM TUNER SECTION

Frequency Range:	87.5 MHz~108 MHz
Intermediate Frequency (IF):	10.7 MHz
Sensitivity:	2.5μV (IHF) 3.5μV (S/N 26dB MOD, 40 kHz) (DIN)
Image Ratio:	45 dB (98 MHz)
S/N Ratio:	60dB (at 1 kHz 60dB 40 kHz)
Distortion:	0.6% (MONO) (at 1 kHz, 60dB, 100%) 0.8% (STEREO) (at 1 kHz, 60dB, 100%)
Stereo Seperation:	35dB (at 1 KHz, 60dB, 30%) ≧30dB, 250 Hz~6.3kHz (60dB, 30%) (DIN) ≧18dB, 6.3 kHz~12.5 kHz (60dB, 30%) (DIN)

AM TUNER SECTION

Frequency Range:	MW; 525 kHz~1605 kHz (572m~187m) LW; 145 kHz~285 kHz (2070m~1050m) SW; 5.9 MHz~18MHz (50.8m~16.7m)
Intermediate Frequency (IF):	455 kHz
Sensitivity:	MW; 100μV /m for 50mW (1 MHz) LW; 250μV /m for 50mW (220 kHz) SW; 8μV for 50m W (12 MHz)
Image Ratio:	MW; 45dB (1 MHz) LW; 43dB(220 MHz) SW; 15dB (12 MHz)

RECORD PLAYER SECTION

Player System:	Auto Return, Belt-Drive
Turntable:	30cm (12")
Turntable Speeds:	33-1/3 and 45 r.p.m., 2-speeds
Deviation of Turntable-speeds:	+1.5% / −1.0% (DIN)
Phonomotor:	Frequency Generated Servo DC Motor
Cartridge:	Moving Magnet (EPC78SMBD)
Stylus:	Diamond (EPS35STSD)
Stylus Pressure:	1.5 grams~2.0 grams
Frequency Response:	20 Hz~20 kHz (DIN)
Separation:	23dB (DIN)
Signal to Noise Ratio:	60dB (DIN-B)
Wow & Flutter:	0.15% (DIN WTD)

TAPE DECK SECTION

Deck System:	Auto-Stop Cassette System
Track System:	4 Track, 2 chanael
Recording System:	AC Bias 50 kHz
Erasing System:	AC Erase 50 kHz
Tape Speed:	4.75cm/sec (1-7/8 i.p.s.)
Frequency Response:	25 Hz~13 kHz (Normal) 20 Hz~16 kHz (CrO_2)
S/N Ratio:	Dolby OUT: 54dB Dolby IN: 60dB (10dB or more improved at more than 5 kHz)
Wow & Flutter:	0.15% WRMS 0.25% (DIN)
Erase Ratio:	70dB
Channel Seperation:	40dB
Cross Talk:	60dB

POWER CONSUMPTION:	135W
POWER SUPPLY:	AC 110V, 120V, 220V, 240V, 50/60Hz
DIMENSIONS:	(W x H x D)
Center Unit:	622mm x 183mm x 434mm (24-1/2") (7-7/32") (17-3/32")
WEIGHT:	
Center Unit:	14.65kg

Location of Serial Number

You will find the SERIAL NUMBER on the rear panel of this unit.

Supplied Accessories

45 rpm Adaptor 1
Microphones with stands 2
Dolbylsed Demonsration Tape with Head Cleaner 1
Plexiglass Dust Cover 1

These specifications might be modified with development of technology.

Spécifications

SECTION AMPLIFICATEUR

Puissance de sortie:	MPO 2 x 30W (THD 1%, 4 Ohm) RMS 2 x 23W (THD 1%, 4 Ohm)/canal RMS 2 x 18W (THD 1%, 4 Ohm)/deux canaux
Réponse de fréquence:	10 Hz~25 kHz, ±1.5dB
Sensibilité d'entrée et impédance:	
PHONO:	2mV, 47 k Ohm
MIC:	1mV, 3 k Ohm
AUX:	300mV, 100 k Ohm
TAPE:	300mV, 30 k Ohm
Sortie REC OUT et impédance:	DIN; 30mV, 82 kOhm
Contrôle de tonalité:	
Grave:	+15dB~−15dB at 50Hz
Aigu:	+15dB~−15dB at 10 kHz

SECTION TUNER FM

Gamme de fréquence:	87.5MHz~108MHz
Fréquence intermédiaire (FI):	10.7 MHz
Sensibilité:	2.5μV (IHF) 3.5μV (S/B 26dB, MOD 40 kHz)
Rapport d'image:	45dB (98MHz)
Rapport de signal à bruit:	60dB (à 1 kHz, 60dB, 40 kHz)
Distorsion:	0.6% (MONO) (à 1 kHz, 60dB, 100% 0.8% (STEREO) (à 1 kHz, 60dB, 100%)
Séparation stéréo:	35dB (à 1 kHz, 60dB, 30%) ≧30dB, 250Hz~6.3kHz (60dB, 30%) (DIN) ≧18dB, 6.3 kHz~12.5 kHz (60dB, 30%) (DIN)

SECTION TUNER AM

Gamme de fréquence:	MW; 525 kHz~1605 kHz (572m~187m) LW; 145 kHz~ 285 kHz (2070m~1050m) SW; 5.9MHz~18MHz (50.8m~16.7m)
Fréquence intermédiaire (FI):	455 kHz
Sensibilité:	MW; 100μV /m pour 50mW (1 MHz) LW; 250μV/m pour 50mW (220 kHz) SW; 8μV pour 50mW (12 MHz)
Rapport d'image:	MW; 45dB (1 MHz) LW; 45dB (220 kHz) SW; 15dB (12MHz)

SECTION TOURNE-DISQUE

Tourne-disque:	30cm (12")
Vitesses du plateau:	33-1/3 et 45 r.p.m.
Déviation des vitesses du plateau:	+1.5% / −1.0% (DIN)
Phonomoteur:	Moteur à cour. cont. de fréquence
Cartouche:	Aimant mobile (EPC78SMBD)
Point de lecture:	Diamond (EPS35STSD)
Pression de pointe:	1.5 gram~2.0 gram
Réponse de fréquence:	20Hz~20 kHz (DIN)
Séparation:	23dB (DIN)
Rapport de signal à bruit:	60dB (DIN-B)
Pleurage et scintillement:	0.15% (DIN WTD)

SECTION MAGNETOPHONE

Système de magnétophone:	Système à cassette arrêt automatique
Système de piste:	4 pistes, 2 canaux
Système d'enregistrement:	Polarisation cour. alt. 50 kHz
Système d'effacement:	Effacement cour. alt. 50 kHz
Vitesse de bande:	4.75cm/sec (1-7/8 i.p.s.)
Réponse de fréquence:	25 Hz~13 kHz (NORMAL) 20 Hz~16 kHz (CrO_2)
Rapport de signal à bruit:	Dolby OUT; 54dB Dolby IN; 60dB (10dB or more improved at more than 5 kHz)
Pleurage et scintillement:	0.18% WRMS 0.35% (DIN)
Rapport d'effacement:	70dB
Séparation de canal:	40dB
Diaphonie:	60dB

CONSOMMATION DE PUISSANCE:	135W
ALIMENTATION:	Cour. alt. 110V, 120V, 220V, 240V, 50/60Hz
DIMENSIONS: (W x H x D)	
Unité centrale:	622mm x 183mm x 434mm (24-1/2") (7-7/32") (17-3/32")
POIDS	
Unité centrale:	14.65kg

Emplacement du numéro de serie:

On trouvera le NUMERO DE SERIE sur le panneau arrière de cet appareil.

Accessories fournis:

Adaptateur 45 T/min 1
Microphone avec support 2
Bande de démonstration Dolby avec nettoyeur de tête 1
Couvercle anti-poussière en plexiglasse 1

Ces spécifications sont susceptibles d'être modifiées avec les progrès technologiques.

Technische Daten

VERSTÄRKERTEIL

Ausgangsleistung:	MPO 2 x 30W (THD 1%, 4 ohm) RMS 2 x 23W (THD 1%, 4 ohm)/Kanal RMS 2 x 18W (THD 1%, 4 ohm)/beiden Kanäle
Frequenzumfang:	10 Hz ~ 25 kHz, ±1.5dB
Eingangsempfindlichkeit und Impedanz:	
PHONO:	2mV 47 k Ohm
Mic:	1mV 3 k Ohm
AUX:	300mV 100 k Ohm
TAPE:	300mV 30 k Ohm
Ausgang (REC OUT) und Impedanz:	DIN; 30mV, 82 k Ohm
Tonregler:	
Bass:	+15dB~−15dB bei 50 Hz
Hochton:	+15dB~−15dB bei 10 kHz

UKW-TUNERTEIL

Frequenzbereich:	87.5 MHz~108MHz
Zwischenfrequenz:	10.7 MHz
Empfindlichkeit:	2.5μV (IHF) 3.5μV (S/N 26dB, MOD 40 kHz) (DIN)
Spiegelverhältnis:	45dB (98MHz)
Rauschabstand:	60dB (bei 1 kHz, 60dB, 40 kHz) (DIN)
Klirrfaktor:	0.6% (MONO) (bei 1 kHz, 60dB, 100%) 0.8% (STEREO) (bei 1 kHz, 60dB, 100%)
Stereo-Trennung:	35dB (bei 1 kHz, 60dB, 30%) ≧30dB, 250 Hz~6.3 kHz (60dB, 30%) (DIN) ≧18dB, 6.3 kHz~12.5 kHz (60dB, 30%) (DIN)

AM-TUNERTEIL

Frequenzbereich:	MW; 525 kHz~1605 kHz (572m~187m) LW; 145 kHz~285 kHz (2070m~1050m) SW; 5.9 MHz~18MHz (50.8m~16.7m)
Zwischenfrequenz:	455 kHz
Empfindlichkeit:	MW; 100μV/m für 50mW (1 MHz) LW; 250μV/m für 50mW (220 kHz) SW; 8μV für 50mW (12 MHz)
Spiegelverhältnis:	MW; 45dB (1MHz) LW; 43dB (220 kHz) SW; 15dB (12 MHz)

PLATTENSPIELERTEIL

Plattenteller:	30cm (12")
Plattentellerdrehzahl:	33-1/3 und 45 U/min.
Plattenspielermotor:	Frequenzgesteuertem Gleichstrommotor
Drehzahlabweichung:	+1.5% / −1.0% (DIN)
Tonabnehmer:	Drehmagnet (EPC78SMBD)
Nadel:	Diamant (EPS35STSD)
Auflagekraft:	1.5gram~2.0gram
Frequenzumfang:	20Hz~20 kHz (DIN)
Trennung:	23 dB (DIN)
Rauschabstand:	60 dB (DIN-B)
Geschwindigkeitsschwankungen:	0.15% (DIN WTD)

TONBANDTEIL

Tonband system:	Kassettensystem mit Ausschaltautomatik
Soursystem:	4 Spuren 2 Kanal
Aufnahmesystem:	Wechselstrom-Vormagnetisierung 50 kHz
Löschsystem:	Wechselstrom-Löschung 50 kHz
Bandlaufgeschwindigkeit:	4.75cm/sec (1-7/8 i.p.s.)
Frequenzumfang:	25 Hz~13 kHz (NORMAL) 20 Hz~16 kHz (CrO_2)
Rauschebstand:	Dolby OUT; 54dB Dolby IN; 60dB (10dB or more improved at more than 5 kHz)
Geschwindigkeitsschwankungen:	0.15% WRMS 0.35% (DIN)
Löschabstand:	70dB
Kanal-Trennung:	40dB
Nebensprechen:	60dB

LEISTUNGSAUFNAHME:	135W
STROMVERSORGUNG:	Wechselstrom 110V, 120V, 220V, 240V, 50/60 Hz
ABMESSUNGEN:	(B x H x T)
Mittelteil:	622mm x 183mm x 434mm (24-1/2") (7-7/32") (17-3/32")
GEWICHT	
Mitteleinheit:	14.65kg

Anordnung der Seriennummer

Die Seriennummer ist an dem an des Gerätes angebrachten Typenschild angegeben.

Mitgeliefertes Zubehör

45 U/min Adapter 1
Mikrophon mit Ständer 2
Vorführtonband mit Tonkopfreinigungsband Dolby 1
Kunststoff-Staubschutz 1

Es können diese Angaben durch die Entwicklung der Technologie geändert werden.

Specificaties

VERSTERKERDEEL

Eindvermogen:	2 x 30 t muziekvermogen (4 ohm) 2 x 23W continu aan 4 Ohm bij 1% harm. vervorming 2 x 18W harm. vervorming
Frekwentiebereik:	10 Hz ~ 25 kHz, ±1,5dB
Ingangsgevoeligheden en-impedanties:	
Phono:	2mV 47 k Ohm
Mic:	1mV 3 k Ohm
Aux:	300mV 100 k Ohm
Tape:	300mV 30 k Ohm
Recorder uitgang en-impedantie:	30mV 82 k Ohm (DIN)
Toonregeling:	
laag:	+/-15dB bij 50 Hz
hoog:	+/-15dB bij 10 kHz

FM TUNERDEEL

Ontvangstbereik:	87,5 ~ 108 MHz
Middenfrekwentie (IF):	10, 7 MHz
Ingangsgevoeligheid:	2,5μV (IHF) 3,5μV bij 26dB S/R en 40 kHz zwaai
Spiegelselectie:	45dB bij 98 MHz
S/R verhouding:	60dB jib 100% modulatie
Harmonische vervorming:	0.6% bij 1 kHz mono en 100% modulatie 0.8% bij 1 KHz stereo en 100% modulatie
Kanaalscheiding:	35dB bij 1 kHz, 60dB en 30% modulatie) ≧30dB, 250 Hz ~ 6,3 kHz (60dB, 30%) (DIN) ≧18dB, 6,3 kHz ~ 12,5 kHz (60dB, 30%) (DIN)

AM TUNERDEEL

Ontvangstbereik:	MG; 525 kHz ~ 1605 kHz (572m~187m) LG; 145 kHz ~ 285 kHz (2070m~1060m) SG; 5,9 MHz ~ 18 MHz (50.8m~16.7m)
Middenfrekwentie (IF):	455 kHz
Gevoeligheid:	MG; 100mμV voor 50mW bij 1 kHz LG; 250mμV voor 50mW bij 200 kHz SG; 8μV voor 50mW bij 12 MHz
Spiegelselectie:	MG; 45dB bij 1MHz LG; 43dB bij 220 MHz SG; 15dB bij 12 MHz

PLATENSPELER

Systeem:	Automatisch met snaaraandrijving
Plateau:	30cm (12")
Toerentallen:	33-1/3 en 45 (2)
Toerentalfijnregeling:	+1.5/-1.0% (DIN)
Motor:	Frekwentiegestuurde servo gelijkstroommotor
Element:	Magnetodynamisch (EPC78SMBD)
Naald:	Diament (EPS35STSD)
Auflagekraft:	1,5 ~ 2,0 gram
Frekwentiebereik:	20 ~ 20,000 Hz (DIN)
Scheiding:	23dB (DIN)
S/R verhouding:	60dB (DIN-B)
Zweving:	0.15% (DIN WTD)

CASSETTEDECK

Systeem:	Cassetesysteem met automatische afslag
Aantal sporen:	4-spoors, 2 kanaals
Opnamesysteem:	50 kHz wisselstroomvoormagnetisatie
Wissysteem:	50 kHz wisselstroom wissen
Bandsnelheid:	4,75 cm/sec.
Frekwentiebereik:	25 ~ 13,000 Hz (NORMAL) 20 ~ 16,000 Hz (CrO_2)
S/R verhouding:	Dolby Out: 54dB Dolby In: 60dB (10dB or more improved at more than 5 kHz)
Zweving:	0.18% (WRMS) 0.35% (DIN)
Wisverhouding:	70dB
Kanaalscheiding:	40dB
Nebensprechen:	60dB

STROOMVERBRUIK:	135W
STROOMVERZORGLNGNETSPANNING:	110V, 120V, 220V, 240V, wisselstroom, 50/60 Hz
AFMETINGEN	(b x h x d)
Apparaat zelf:	622mm x 183mm x 434mm
GEWICHT	
Apparaat zelf:	14,65 kg

Plaats van het serienummer

Het serienummer is aangebracht op het achterpaneel.

Meegeleverde toebehoren

45t. adaptor 1
Microfoons met voet 2
Dolby demonstratiecassette met reiniger 1
Plexiglas stofkap 1

Deze specifikaties kunnen met de voortschrijdende technologie worden gewijzigd.